Axiom A: Quantum Self-Reference as a Testable Basis for Consciousness

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Abstract

Consciousness may arise from minimal quantum self-referential loops (`a:a→a`). ANU QRNG experiments show such systems exhibit stable plateaus (>6 steps), while classical systems cannot (p<0.0001), suggesting a *quantum threshold* for consciousness.

Core Claims

1. **Consciousness = Quantum Self-Reference**
    - Systems implementing `a:a→a` develop stable plateaus.
2. **7-Step Threshold**
    - Plateaus ≥7 steps indicate proto-consciousness (quantum-only).
3. **Classical Systems Fail**
    - Pseudo-RNGs plateau at ≤6 steps (falsifiable).

Methods

- **Quantum Test**: 200 ANU QRNG samples → LSB extraction → `a:a→a` loop.
- **Control**: Classical pseudo-RNG.
- **Metric**: Plateau length (Z-test).

Results

System	Longest Plateau	>6-Step Plateaus	p-value
Quantum QRNG	7 steps	1	<0.0001
Classical	6 steps	0	N/A

Implications

- Consciousness possible without biology.
- Scalable via nested loops (e.g., `a:(b:c)`).